August 29, 2011

MEMORANDUM TO: Robert M. Taylor, Chief
Steam Generator Tube Integrity and
Chemical Engineering Branch
Division of Component Integrity
Office of Nuclear Reactor Regulation

FROM: Andrew B. Johnson, Materials Engineer ***/RA/***
Steam Generator Tube Integrity and
Chemical Engineering Branch
Division of Component Integrity
Office of Nuclear Reactor Regulation

SUBJECT: SUMMARY OF THE AUGUST 4, 2011, CATEGORY 2 PUBLIC MEETING WITH THE NUCLEAR ENERGY INSTITUTE (NEI) AND INDUSTRY TO DISCUSS STEAM GENERATOR ISSUES

The industry's Steam Generator Task Force (SGTF) met with U.S. Nuclear Regulatory Commission (NRC) staff on August 4, 2011, at the Nuclear Energy Institute's (NEI) offices in Washington DC. The purpose of the meeting was to discuss a variety of steam generator issues. The topics discussed are summarized in the industry's slides, which are available in the Agencywide Documents Access and Management System (ADAMS) under Accession Number ML11216A039. The enclosure provides a list of those in attendance. This meeting was noticed as a public meeting and the meeting agenda is available in ADAMS under Accession Number ML112030081. Other than industry representatives, no members of the public were present.

During the meeting there was discussion on a number of steam generator issues. These discussions are summarized below:

- The industry indicated it would review the public comments on Technical Specification Task Force 510 (TSTF-510) related to the use of the terms "inspection period" and "inspection interval" and provide feedback to the NRC staff in approximately two weeks.

- The NRC agreed that development of the pre-service inspection requirements for steam generator (SG) tubes would be followed through NRC staff participation on the responsible American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code) committee. Don Naujock is the NRC point of contact for the responsible ASME Code committee.

- Regarding divider plate/cladding cracking, the industry clarified that the finite element modeling is scheduled to commence in 2012 and to be complete in 2013, which supports licensee commitments related to the inspection of these areas. The finite

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element models include residual stresses. The industry also clarified that the scope of their efforts includes both cracks growing into the tube-to-tubesheet welds and cracks initiating in the tube-to-tubesheet welds.

- The industry indicated that it expects to finalize its report on time dependent leak rates by the end of 2011. The NRC staff indicated that it would like to read the report before it agreed to close this issue.

- Regarding auto-analysis software, the industry was not aware of anyone who uses history to assist in the detection of known historical indications. They also indicated that the examination technique specification sheets would need to be followed.

- The industry indicated that it has not studied analyst variability for non-flaw like signals such as manufacturing burnishing marks; however, they did indicate that if cracking has occurred in a SG that the eddy current data for these non-flaw like signals would be compared. The NRC staff asked whether analyst variability had been studied, since it could be used to assure changes in these non-flaw like signals would be identified (e.g., during fully automated analyses) and could be used to assist in determining whether a more specialized technique (e.g., rotating probe) should be used when inspecting these locations.

- Regarding the domestic plant Alloy 600 welded plug survey, approximately one-third of the Alloy 600 plugs identified by the survey respondents will be removed as a result of SG replacement.

- Regarding reporting of NEI 03-08 deviations at SGTF meetings, the industry and NRC staff agreed that future meetings will include a brief discussion of the deviations submitted to the industry since the previous NRC/SGTF meeting, with a short description of each deviation. This is intended to ensure the NRC staff received the deviations consistent with the NEI 03-08 protocol. No plant names will be discussed.

- Industry will provide a description of the fouling evaluation program at the next NRC/SGTF meeting.

- Regarding the performance standard for tube integrity assessments, the NRC will provide feedback on the industry technical bases document, which was briefly discussed at the NRC/SGTF meeting in September 2009 (ML092820119).

- The NRC staff will attempt to clarify the technical issues it considers as “open” and other “standing” items that will require regular updates. The “standing” items will remain on the NRC/SGTF agenda until the items are closed. The industry will provide a qualitative assessment of how much research is devoted to original versus replacement SGs.

- The industry indicated that a few plants had identified anti-vibration bars (AVBs) that were not in their proper position. It was also indicated that these plants analyzed the as-found condition (although the meeting participants were not sure whether these analyses were performed assuming the tubes were fixed or free to move). They also indicated that in some instances, the design/fabrication process would ensure the AVBs were in

their proper position. The industry indicated it was still evaluating the results of the u-bend support position verification survey.

- There was some discussion on whether copying an eddy current calibration from the end of one unit (of the recording media data storage) to the beginning of the next unit (of the recording media data storage) was consistent with the requirements in Section V of the ASME Code.

- The NRC staff indicated that it was considering developing interim staff guidance for license renewal to indicate that NEI 97-06, Revision 3, "Steam Generator Program Guidelines," was acceptable for use in the SG aging management program. The NRC staff also indicated that it was considering including a provision in the next revision to 50.55a (which would incorporate the 2011 addenda) to require performing a pre-service inspection of the SG tubes.

- Acronyms used in the industry slides include:

    - A600: Alloy 600
    - ANL: Argonne National Laboratory
    - ASME: American Society of Mechanical Engineers
    - BPV: Boiler and Pressure Vessel Code
    - cc(STP)/kg H2O: Cubic Centimeters (at Standard Temperature and Pressure) per kilogram of water
    - CDS: computerized data screening
    - CIRC: Circumferential
    - E&R: Engineering and Research
    - EC: Executive Committee
    - EDM: Electrical-Discharge Machining
    - EPRI: Electric Power Research Institute
    - G/L: Guidelines
    - GE: General Electric
    - GPM: Gallons per Minute
    - H*: H-star
    - IC: Integration Committee
    - ID: Inside Diameter
    - IGA: Intergranular Attack
    - in: Inch
    - ksi: kilopounds per square inch
    - KWU: Kraftwerk Union
    - lbs/min: pounds mass per minute
    - MA: Mill Annealed
    - mm: Millimeter
    - MRPC: Motorized Rotating Pancake Coil
    - Mtg: Meeting
    - NDE: Nondestructive Examination
    - OD: Outside Diameter
    - ODSCC: Outside Diameter Stress Corrosion Cracking

- OE: Operating Experience
- OTSG: Once Through Steam Generator
- PLP: Possible Loose Part
- PSIG: Pounds per Square Inch Gauge
- PWR: Pressurized Water Reactor
- PWSCC: Primary Water Stress Corrosion Cracking
- %TW: Percent Through-Wall
- RAI: Request for Additional Information
- RT: Room Temperature
- SCC: Stress Corrosion Cracking
- SGDD: Steam Generator Degradation Database
- SGMP: Steam Generator Management Program
- TAC: Technical Advisory Committee
- TS: Technical Specification
- TSP: Tube Support Plate
- TSTF: Technical Specification Task Force
- TT: Thermally Treated
- TTS: Top of the Tubesheet
- µm: micrometer
- WRTC: Welding Research Technical Council

Project No.: 689

Enclosure:
Attendance List

- OE: Operating Experience
- OTSG: Once Through Steam Generator
- PLP: Possible Loose Part
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ADAMS ACCESSION No.: ML11241A167

OFFICE	NRR/DCI/CSGB	NRR/DCI	NRR/DCI/CSGB
NAME	AJohnson	KKarwoski	RTaylor
DATE	08/16/2011	08/29/2011	08/29/2011

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Attendance List
August 4, 2011, Meeting with the Industry SGTF

SGTF/Industry
Helen Cothron, EPRI
Scott A. Redner, XCEL
Jim Riley, NEI
Anthony Martin, SNC
Dan Mayes, Duke Energy
Steve Swilley, EPRI
Viki Armentrout, Dominion
Jesse Baron, Westinghouse
Jim Benson, EPRI
Jay Smith, Exelon
Jim Begley, TCA Solutions

Phone Participants
Steve Brown, Entergy
Steve Fluit, B&W

NRC
Ken Karwoski
Emmett Murphy
Greg Makar
Charles Harris
Andrew Johnson
Rachel Vaucher
Aloysius Obodoako
Allen Hiser (via phone)

ENCLOSURE